

REMARKS

Claims 1-43 and 45-64 are pending in the application. Claim 2-9, 19-37, 42-43, 46-53 and 62-64 are withdrawn from consideration. Reconsideration of the application is respectfully requested in view of the comments below.

I. REJECTION OF CLAIMS 1 AND 45 UNDER 35 U.S.C. § 103(a)

Claims 1 and 45 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0197129 (Murrell et al.) in view of U.S. Patent No. 6,716,727 (Walther); or in the alternative, U.S. Patent No. 6,841,789 in view of U.S. Patent No. 7,064,049 (Ito et al.). Withdrawal of this rejection is respectfully requested for at least the following reasons.

- I. Walther does not teach a workpiece support structure that is operable to secure a workpiece having an implantation surface that is oriented facing downward toward the extraction assembly, as recited in claims 1 and 45.***

Claims 1 and 45 each are directed to an ion system wherein an extraction assembly is configured to extract ions from a top portion of a chamber, and a workpiece support structure that is operable secure a workpiece having an implantation surface **oriented facing downward toward the extraction assembly** for implantation thereof. The combination of Murrell et al. and Walther do not teach the claimed invention for at least the following reasons.

As conceded in the Office Action, Murrell et al. do not teach a workpiece support structure as claimed. (See, O.A., 1/25/07, p. 3, ¶19). As will be further appreciated below, Walther does not teach this feature either, and consequently a combination of the references does not render obvious the claimed invention.

As illustrated in Figs. 2 and 3 of Walther, and as described in Col. 6, lines 52-56 and lines 59-61, Walther discloses a workpiece support structure composed of a platen

76 that secures a workpiece ***having an implantation surface oriented upward, and not downward as claimed.*** This illustration in Fig. 3 is buttressed by the statement by Walther that: "Platen 76 and wafer 72 are moved ***upwardly*** into opening 158 in plasma processing chamber 120." (Col. 6, lines 52-54). If the platen 76 holding the wafer 72 in Fig. 3 is moving up, then clearly the implant surface of the workpiece 72 is also facing upwardly. Therefore Walther does not teach the workpiece support structure as recited in claims 1 and 45. Consequently, the combination of Murrell et al. and Walther do not render obvious the invention of claims 1 and 45. Accordingly, withdrawal of the rejection is respectfully requested.

ii. The combination of Koh et al. and Ito et al. is improper because the requisite motivation to combine together the references does not exist.

It is conceded that prior art references may be combined together if one of ordinary skill in the art would be motivated to do so. Such motivation may be found in the references themselves, in the nature of the problem to be solved, or in the general knowledge of persons of ordinary skill in the art. MPEP § 2143.01. However, such motivation can not be vague or conclusory, but instead must be ***clear and particular.*** In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999). It is respectfully submitted that upon an evaluation of the cited art as a whole in light of the above standard, the combination clearly is improper due to a lack of motivation for such a combination or modification.

The Office Action concedes that Koh et al. do not teach an extraction assembly, but states that it would have been obvious to use the extraction assembly of Ito et al. because "it is known in the art that extraction electrodes are disposed near the exit of [the] ion source chamber." (O.A., 1/25/07, p. 9, ¶4). Initially, the chamber of Koh et al. in Fig. 2 thereof is ***not an ion source chamber***, but rather is a ***process chamber*** that has an ion gun 210 therein. More particularly, both the ion gun 210 (an ion source) and the workpiece 200 reside ***fully within*** the process chamber. (See, e.g., Fig. 2; Col. 5,

lines 8-10). Consequently, **the reason Koh et al. do not teach an extraction assembly because no extraction is needed or desired when all the components at issue are within a fully contained process chamber.** Therefore one of ordinary skill in the art would not be motivated to modify Koh et al. to add an extraction assembly because such a component would, at the very least, be unnecessary, and could possibly render Koh et al. unsatisfactory for its intended purpose. Thus the combination of Koh et al. and Ito et al. is improper due to a lack of the requisite motivation. Accordingly, withdrawal of the rejection is respectfully requested.

iii. The combination of Koh et al. and Ito et al. does not result in an extraction assembly that is operable to extract ions from a top portion of the chamber, as recited in claims 1 and 45.

Even if a combination of Koh et al. and Ito et al. was proper (which applicants respectfully assert is not), the combination of Koh et al. and Ito et al. does not result in the claimed invention. Claims 1 and 45 are directed to a chamber having a plasma source within the chamber, and an extraction assembly that is operable to extract ions **from the top portion of the chamber.** Further, a workpiece support structure is associated with the top portion of the chamber and secures a workpiece oriented with an implantation surface facing downward toward the extraction assembly.

The chamber in Fig. 2 of Koh et al. is not an ion source chamber, but rather is a process chamber that has an ion gun 210 (an ion source) therein. (See, e.g., Fig. 2; Col. 5, lines 8-10). Consequently, the chamber of Koh et al. corresponds to the claimed chamber that has the plasma source therein. **The extraction assembly of Ito et al. that is mentioned in the Office Action does not correspond to a process chamber, but rather corresponds to an extraction assembly for a plasma ion source 5.** Consequently, one of ordinary skill in the art looking to modify Koh et al. in view of Ito et al. would, if anything, replace the ion gun 210 (the ion source within the process chamber) with the plasma ion source 5 of Ito et al. With such a swap of ion sources, the extraction assembly (that is associated with the plasma ion source 5) would not be

associated with the **top of the chamber** as claimed. Rather, with such a replacement, the extraction assembly would be associated with the ion source which is located at the **bottom of the chamber** where the ion gun 210 is located, as shown in Fig. 2 of Koh et al. Consequently, even if a combination of the cited art was proper, the resultant combination does not teach the claimed invention, and thus claims 1 and 45 are non-obvious. Accordingly, withdrawal of the rejection is respectfully requested for this additional reason.

II. REJECTION OF CLAIMS 10-13, 15-16, 54-56 AND 58-59 UNDER 35 U.S.C. § 103(a)

Claims 10-13, 15-16, 54-56 and 58-59 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Murrell et al. in view of Walther, and further in view of U.S. Patent No. 5,036,252 (Lob et al.). Alternatively, the same claims have been rejected over Koh et al. in view of Ito et al., and further in view of Lob et al. Withdrawal of this rejection is respectfully requested for at least the following reasons.

As highlighted above, the combination of Murrell et al. and Walther do not teach the features of claims 1 and 45, respectively. Claims 10-13, 15-16, 54-56 and 58-59 each depend, either directly or indirectly, on claims 1 and 45, respectively. Lob et al. do not remedy the deficiencies of Ennis and Murrell et al. Therefore claims 10-13, 15-16, 54-56 and 58-59 are non-obvious for at least the same reasons.

Similarly, the combination of Koh et al. and Ito et al. do not teach the features of claims 1 and 45, respectively. Further, even if they did, as highlighted above, it has been shown that the combination of Koh et al. and Ito et al. is improper due to a lack of motivation for the combination. Claims 10-13, 15-16, 54-56 and 58-59 each depend, either directly or indirectly, on claims 1 and 45, respectively. Lob et al. do not remedy the deficiencies of Koh et al. and Ito et al. Therefore claims 10-13, 15-16, 54-56 and 58-59 are non-obvious for at least the same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

III. REJECTION OF CLAIMS 17-18, 38-41 AND 60-61 UNDER 35 U.S.C. § 103(a)

Claims 17-18, 38-41 and 60-61 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Murrell et al., Walther, Lob et al., and further in view of U.S. Patent 3,961,103 (Aisenberg). Alternatively, the same claims were rejected over Koh et al. in view of Ito et al., Lob et al. and further in view of Aisenberg. Withdrawal of this rejection is respectfully requested for at least the following reasons.

- I. The cited combination does not teach the invention, because Aisenberg does not teach interstitial pumping apertures in addition to the extraction apertures, as recited in claims 17, 38 and 60, respectively.***

Claims 17, 38 and 60 each recite a first extraction electrode that comprises extraction apertures extending therethrough. At least one of the other extraction electrodes comprises interstitial pumping apertures. ***Therefore the extraction apertures and the interstitial pumping apertures are different.*** Contrary to the assertion made in the Office Action, Aisenberg does not teach this feature.

Aisenberg discloses a film deposition apparatus in Fig. 1 in which a constrictor electrode 26 has an aperture 26A, and an anode extraction electrode 24 has an aperture 24A. According to Fig. 1, ***each electrode has a single aperture.*** According to Aisenberg, "[t]he apertures in the electrodes 24 and 26 permit differential pumping..." (Col. 4, Ins. 4-5). Therefore according to Aisenberg, ***the reference does not teach additional interstitial pumping apertures that differ from an extraction aperture as claimed.*** Therefore the cited art combinations do not teach the invention of claims 17, 38 and 60.

Further, claims 18 and 61 further recite that the interstitial pumping apertures ***have an area that is greater than that of the extraction apertures.*** Since the cited art disclose the interstitial pumping aperture and extraction aperture ***being the same aperture,*** the cited art does not teach this feature. Therefore claims 18 and 61 are non-

obvious over the cited art combinations for this additional reason. Accordingly, withdrawal of the rejections is respectfully requested.

IV. CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 50-1733, EATNP138US.

Respectfully submitted,
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